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May 6, 2002

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Commissioner for Patents
Washington, D.C. 20231

Art Unit 1632

Re: U.S. Utility Patent Application
Appl. No. 10/023,033; Filed: December 19, 2001
For: **Artificial Mammalian Chromosome**
Inventors: Harrington *et al.*
Our Ref: 1522.0010004/MAC

Sir:

Transmitted herewith for appropriate action are the following documents:

1. Information Disclosure Statement;
2. A listing of the cited documents on form PTO-1449;
3. Copies of the cited documents(AA1-AI1;AL1-AL2;AR1-AS21); and
4. Return Postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Michele A. Cimbala
Attorney for Applicants
Registration No. 33,851

MAC:krm
Enclosures

SKGF_DC1:10737.1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
Harrington *et al.*
Appl. No. 10/023,033
Filed: December 19, 2001
For: **Artificial Mammalian Chromosome**

Confirmation No. 5770
Art Unit: 1632
Examiner: *To be assigned*
Atty. Docket: 1522.0010004/MAC

Information Disclosure Statement

Commissioner for Patents
Washington, D.C. 20231

Sir:

Listed on accompanying Form PTO-1449 are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98. A copy of each of these documents is provided. The Examiner's attention is directed to document AT15 which was cited by the Examiner on a PTO-892 in the parent application, therefore no copy of the document is provided.

Where the publication date of a listed document does not provide a month of publication, the year of publication of the listed document is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the month of publication is not in issue. Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

In accordance with 37 C.F.R. § 1.98(a)(3), Applicants' undersigned representative submits the following concise explanation of the relevance of the non-English language documents, Reference Number AL2 cited on Form PTO-1449:

Reference AL2, France Patent Office Publication No. 2 593 827, in the name of Institut National de la Sante et de la Recherche Medicale, appears to relate to DNA fragments containing a centromeric nucleotide sequence, and to vectors containing such DNA fragments plus one or more genes and a vector sequence which may be used to shuttle nucleic acid sequences between animal, bacterial and yeast hosts. A copy of the abstract of the publication in the English language (from Derwent WPI) is included herewith as Reference Number AT21.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith. It is further understood that the Examiner will consider information that had been cited or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. § 120. 1138 OG 37, 38 (May 19, 1992).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449, and to indicate in the official file wrapper of this patent application that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Michele A. Cimbala
Attorney for Applicants
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Date: May 6, 2002

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FORM PTO-1449

INFORMATION DISCLOSURE STATEMENT

ATTY. DOCKET NO. 1522.0010004/MAC	APPLICATION NO. 10/023,033
APPLICANT Harrington *et al.*	
FILING DATE December 21, 2001	GROUP To be assigned

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	AA1	5,869,294	02/09/99	Harrington *et al.*	435	91.1	09/20/96
	AB1	5,695,967	12/09/97	Van Bokkelen *et al.*	435	91.1	06/07/95
	AC1	5,288,625	02/22/94	Hadlaczky	435	172.2	09/13/91
	AD1	5,242,808	09/07/93	Maugh *et al.*	435	69.1	01/23/91
	AE1	5,202,256	04/13/93	Maugh *et al.*	435	252.3	08/16/91
	AF1	5,202,236	04/13/93	Maugh *et al.*	435	69.1	05/25/90
	AG1	5,149,657	09/22/92	Maugh *et al.*	435	320.1	02/08/91
	AH1	5,049,504	09/17/91	Maugh *et al.*	435	252.33	05/30/90
	AI1	4,889,806	12/26/89	Olson *et al.*	435	172.3	04/15/87
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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL1	WO 96/40965 A1	12/19/96	PCT			Yes No
	AM1	WO 95/32297 A1	11/30/95	PCT			Yes No
	AN1	EP 0 532 050 A2	03/17/93	Europe			Yes No
	AO1	WO 92/07080 A1	04/30/92	PCT			Yes No
	AP1	WO 91/07496 A1	05/30/91	PCT			Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	1	Aladjem, M.I. *et al.*, "Genetic Dissection of a Mammalian Replicator in the Human β-Globin Locus," *Science 281*:1005-1009, American Association for the Advancement of Science (August 1998).
	AS	1	Altman, A.L. and Fanning, E., "The Chinese Hamster Dihydrofolate Reductase Replication Origin Beta Is Active at Multiple Ectopic Chromosomal Locations and Requires Specific DNA Sequence Elements for Activity," *Mol. Cell. Biol. 21*:1098-1110, American Society for Microbiology (February 2001).
	AT	1	Brown, W.R.A., "Mammalian artificial chromosomes," *Curr. Opin. Genet. Devel. 2*:479-486, Current Biology, Ltd. (1992).

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

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	AA						
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FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB-CLASS	TRANSLATION
	AL2	FR 2 593 827	08/07/87	France			Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	2	Brown, K.E. *et al.*, "Dissecting the centromere of the human Y chromosome with cloned telomeric DNA," *Hum. Mol. Genet.* 3:1227-1237, Oxford University Press (August 1994).
	AS	2	Brown, W. *et al.*, "Mammalian artificial chromosomes," *Curr. Opin. Genet. Devel.* 6:281-288, Current Biology Ltd. (June 1996).
	AT	2	Brutlag, D. *et al.*, "Synthesis of Hybrid Bacterial Plasmids Containing Highly Repeated Satellite DNA," *Cell* 10:509-519, MIT (1977).

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	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	3	Carroll, S.M. *et al.*, "Localization of a Bidirectional DNA Replication Origin in the Native Locus and in Episomally Amplified Murine Adenosine Deaminase Loci," *Mol. Cell. Biol. 13*:2971-2981, American Society for Microbiology (1993).
	AS	3	Cossons, N. *et al.*, "Circular YAC Vectors Containing a Small Mammalian Origin Sequence Can Associate With the Nuclear Matrix," *J. Cell. Biochem. 67*:439-450, Wiley-Liss, Inc. (December 1997).
	AT	3	DePamphilis, M.L., "Eukaryotic DNA Replication: Anatomy of An Origin," *Annu. Rev. Biochem. 62*:29-63, Annual Reviews Inc. (1993).

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	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	4	DePamphilis, M.L., "Replication origins in metazoan chromosomes: fact or fiction," *BioEssays 21*:5-16, John Wiley & Sons, Inc. (January 1999).
	AS	4	Farr, C. *et al.*, "Functional reintroduction of human telomeres into mammalian cells," *Proc. Natl. Acad. Sci. USA 88*:7006-7010, The National Academy of Sciences (1991).
	AT	4	Françon, P. *et al.*, "Initiation of DNA replication in eukaryotes: questioning the origin," *FEBS Lett. 452*:87-91, Federation of European Biochemical Societies (June 1999).

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	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	5	Ge, Y. *et al.*, "Sequence, Higher Order Repeat Structure, and Long-Range Organization of Alpha Satellite DNA Specific to Human Chromosome 8," *Genomics 13*:585-593, Academic Press, Inc. (1992).
	AS	5	Grimes, B. and Cooke, H., "Engineering mammalian chromosomes," *Hum. Mol. Genet.* 7:1635-1640, Oxford University Press (September 1998).
	AT	5	Haaf, T. *et al.*, "Integration of Human α-Satellite DNA into Simian Chromosomes: Centromere Protein Binding and Disruption of Normal Chromosome Segregation," *Cell 70*:681-696, Cell Press (1992).

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	AL						Yes No
	AM						Yes No
	AN						Yes No
	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	6	Hadlaczky, G. *et al.*, "Centromere formation in mouse cells contransformed with human DNA and a dominant marker gene," *Proc. Natl. Acad. Sci. USA 88*:8106-8110, The National Academy of Sciences (1991).
	AS	6	Harrington, J.J. *et al.*, "Formation of *de novo* centromeres and construction of first-generation human artificial microchromosomes," *Nature Genet. 15*:345-355, Nature America, Inc. (April 1997).
	AT	6	Hartley, J.L and Gregori, T.J., "Cloning multiple copies of a DNA segment," *Gene 13*:347-353, Elsevier/North-Holland Biomedical Press (1981).

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	AL						Yes No
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	AO						Yes No
	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	7	Heinzel, S.S. *et al.*, "Autonomous DNA Replication in Human Cells Is Affected by the Size and the Source of the DNA," *Mol. Cell. Biol. 11*:2263-2272, American Society for Microbiology (1991).
	AS	7	Henning, K.A. *et al.*, "Human artificial chromosomes generated by modification of a yeast artificial chromosome containing both human alpha satellite and single-copy DNA sequences," *Proc. Natl. Acad. Sci. USA 96*:592-597, The National Academy of Sciences (January 1999).
	AT	7	Hofer, B., "Construction and stability of a sixfold repeated artificial gene," *Eur. J. Biochem. 167*:307-313, FEBS (1987).

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	AP						Yes No

OTHER (Including Author, Title, Date, Pertinent Pages, etc.)

	AR	8	Hosoda, F. *et al.*, "An F factor based cloning system for large DNA fragments," *Nucl. Acids Res. 18*:3863-3869, Oxford University Press (1990).
	AS	8	Huxley, C., "Mammalian artificial chromosomes: a new tool for gene therapy," *Gene Ther. 1*:7-12, Macmillan Press (1994).
	AT	8	Huxley, C. *et al.*, "Ordering Up Big MACs," *Bio/Techonol. 12*:586-590, Nature Publishing Company (1994).

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	AR	9	Hwang, E.S. and Scocca, J.J, "A Method of Cloning Multiple Direct Repeats of a DNA Segment," *BioTechniques 14*:766-767, Eaton Publishing Co. (1993).
	AS	9	Ikeno, M. *et al.*, "Construction of YAC-based mammalian artificial chromosomes," *Nature Biotechnol. 16*:431-439, Nature Publishing Co. (May 1998).
	AT	9	Kellogg, D.R. *et al.*, "The Centrosome and Cellular Organization," *Annu. Rev. Biochem. 63*:639-674, Annual Reviews Inc. (1994).

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	AR	10	Kelly, R.E. *et al.*, "Identification of an Origin of Bidirectional DNA Replication in the Ubiquitously Expressed Mammalian *CAD* Gene," *Mol. Cell. Biol. 15*:4136-4148, American Society for Microbiology (August 1995).
	AS	10	Kobayashi, T. *et al.*, "Identification of Primary Initiation Sites for DNA Replication in the Hamster Dihydrofolate Reductase Gene Initiation Zone," *Mol. Cell Biol. 18*:3266-3277, (June 1998).
	AT	10	Kovacic, R.T. *et al.*, "Protection of megabase DNA from shearing," *Nucl. Acids Res. 23*:3999-4000, Oxford University Press (October 1995).

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	AR	11	Krysan, P.J. *et al.*, "Isolation of Human Sequences That Replicate Autonomously in Human Cells," *Mol. Cell. Biol. 9*:1026-1033, American Society for Microbiology (1989).
	AS	11	Larin, Z. *et al.*, "*De novo* formation of several features of a centromere following introduction of a Y alphoid YAC into mammalian cells," *Hum. Mol. Genet. 3*:689-695, Oxford University Press (1994).
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APPLICANT Harrington *et al.*	
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	AR	12	Malott, M. and Leffak, M., "Activity of the c-*myc* Replicator at an Ectopic Chromosomal Location," *Mol. Cell. Biol. 19*:5685-5695, American Society for Microbiology (August 1999).
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	AR	13	Nielson, T.O. *et al.*, "Circular YAC Vectors Containing Short Mammalian Origin Sequences Are Maintained Under Selection as HeLa Episomes," *J. Cell. Biochem.* 76:674-685, Wiley-Liss, Inc. (January 2000).
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	AR	14	O'Connor, M. *et al.*, "Construction of Large DNA Segments in *Escherichia coli*," *Science 244*:1307-1312, American Association for the Advancement of Science (1989).
	AS	14	Orkin, S.H. and Motulsky, A.G., "Report and Recommendations of the Panel to Assess the NIH Investment in Research on Gene Therapy," issued by the National Institutes of Health (December 1995).
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	AR	15	Rosenfeld, P.J. and Kelly, T.J., "Purification of Nuclear Factor I by DNA Recognition Site Affinity Chromatography," *J. Biol. Chem.* *261*:1398-1408, The American Society of Biological Chemists, Inc.(1986).
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	AR	18	Tyler-Smith, C. and Willard, H.F., "Mammalian chromosome structure," *Curr. Opin. Genet. Devel. 3*:390-397, Current Biology Ltd. (1993).
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	AR	19	Weiss, R., "Artificial Human Chromosomes That Replicate Developed in Lab. Scientists Aim to Ferry Curative Genes to Cells," Washington Post, pages AO1 and A6 (April 1, 1997).
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	AR	20	Willard, H.F., "Centromeres of mammalian chromosomes," *TIG 6*:410-415, Elsevier Science Publishers Ltd. (1990).
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	AR	21	Willard, H.F., "Human artificial chromosomes coming into focus," *Nature Biotechnol. 16*:415-416, Nature America Inc. (May 1998).
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